

Amendments to the Specification

The paragraph starting at page 1, line 7 and ending at line 13 has been amended as follows.

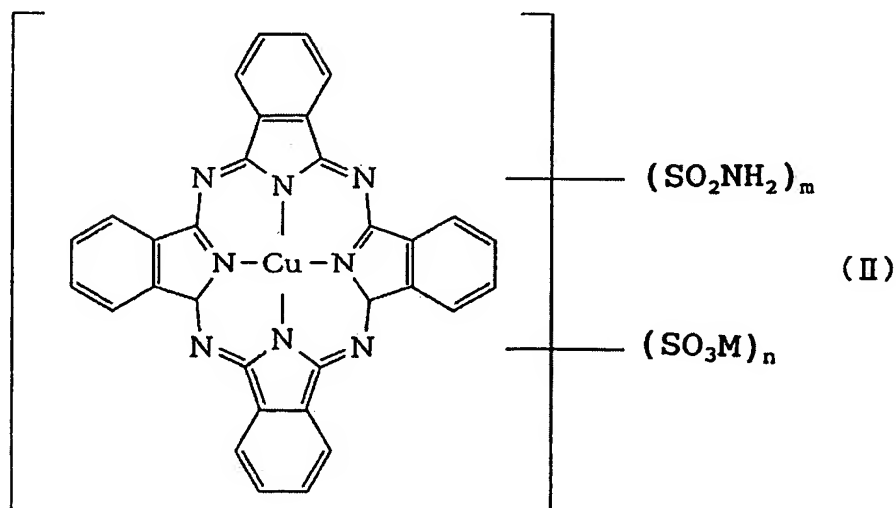
--The present invention relates to an ink, particularly to an ink jet recording ink, and more particularly to an aqueous ink providing an image improved in discoloration and fading resistance in an indoor environment, an ink jet recording method utilizing the same, and an ink tank, a recording unit and an ink jet recording apparatus to be used therein.--

Please amend the paragraph beginning at page 1, line 15, and ending at line 25, as follows.

--Images obtained by the ink jet recording have acquired so fine an image quality as to be comparable with ~~the~~ a silver halide photograph, a representative of high image quality. Recently, in addition to the original image quality, preservation of such a fine image for a long period of time without deterioration has become a major concern for the user. In view of a prolonged storage of an image, fading with light is a major problem which ~~have~~ has been tackled by selecting dyes of high light fastness. For example, as a dye for a cyan color ink, C.I. Direct Blue 199 or C.I. Direct Blue 86 is now employed.--

Please amend the paragraph beginning at page 2, line 11, and ending at page 2, line 8, as follows.

--Such a drawback is not solved with conventional dyes such as C.I. Direct Blue 199 or C.I. Direct Blue 86 having a sulfon group or a sulfonamide group introduced into the copper phthalocyanine for water solubility. In order to improve the gas resistance, various methods have been proposed as patent applications, such as introduction of substituents into the copper phthalocyanine skeleton different from C.I. Direct Blue 199 etc., and employment of a dye of another skeleton in combination with the conventional dyes. For example, Japanese Patent Application Laid-open No. 2002-105349A discloses, as a cyan dye compound for an ink jet ink with an improved gas resistance, a mixture of compounds obtainable by chlorosulfonating a copper phthalocyanine and then amidating using 2.5 moles or more of an amidating agent to 1 mole of the starting copper phthalocyanine, represented by the following formula (II):



wherein M represents a proton, an alkali metal ion, an alkali earth metal ion, or an onium ion or an ammonium ion of an organic amine; m represents an integer from 1 to 4; n represents an integer from 1 to 3; and m+n is an integer from 1 to 4.--

Please amend the paragraph beginning at page 3, line 9, and ending at line 16, as follows.

--However, the present inventors have found that an ink jet ink containing such phthalocyanine dyes may reveal excellent gas resistance but ~~has~~ have another drawback that an image formed with such an ink on a specific recording medium such as coating paper and glossy paper suffers from very poor water resistance and metallic luster called bronze phenomenon due to the coagulation of the dye on the recording medium.--

Please amend the paragraph beginning at page 3, line 19, and ending at page 4, line 4, as follows.

--In consideration of the foregoing, an object of the present invention is to provide a blue aqueous ink that can provide an image of high saturation, little fading or a discoloration and excellent water resistance free from the bronze phenomenon.--

Please amend the paragraph beginning at page 4, line 5, and ending at line 8, as follows.

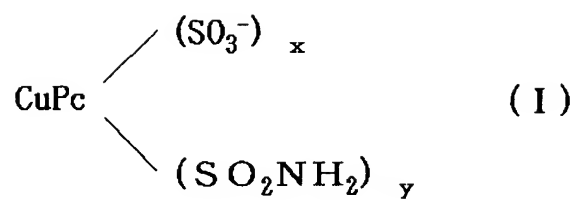
--Another object of the present invention is to provide an image recording method capable of forming an image of high saturation, little fading or a discoloration and excellent water resistance.--

Please amend the paragraph beginning at page 5, line 20, and ending at line 25, as follows.

--According to the present invention employing a specific dye for a cyan ink and a specific compound for an aqueous medium, a print that shows little fading or discoloration in an indoor environment, and is excellent in ~~the~~ water resistance and free from bronze phenomenon can be obtained.--

Please amend the paragraph beginning at page 6, line 12, and ending at line 18, as follows.

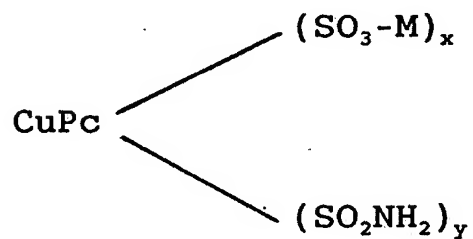
--The aqueous ink of the present invention contains a phthalocyanine dye represented by the following general formula (I):



wherein CuPc represents a copper phthalocyanine residue; x represents 1, 2, 3 or 4 and y represent represents 0, 1, 2 or 3.

Please amend the paragraph beginning at page 6, line 19, and ending at page 7, line 5, as follows.

--To include the aforementioned ion in the aqueous ink, it is preferable to add a phthalocyanine dye represented by the following formula:



wherein CuPc represents a copper phthalocyanine residue; M represents an alkali metal (such as Li, Na, K, Rb, Cs or Fr) or ammonium; x represents 1, 2, 3 or 4; and y ~~represent~~ represents 0, 1, 2 or 3.--

Please amend the paragraph beginning at page 7, line 20, and ending at page 8, line 11, as follows.

--Also in the present invention, the component of $x + y = 4$ is present in a larger amount than the component of $x + y = 3$, which improves particularly the gas resistance. ~~Ratio~~ The ratio of the components can be determined from the peak height A of the component of $x + y = 4$ and the peak height B of the component of $x + y = 3$ obtained by analyzing the dye of the formula (I) by using high-speed liquid chromatography monitoring at a wavelength of 254 nm corresponding to benzene ring absorption. In the present invention, A/B preferably exceeds 1. Also excellent gas resistance is obtained in case A/B is equal to or larger than 1.5. Also in consideration of prevention of bronze phenomenon, the ratio A/B is preferably 9 or less, particularly preferably 4 or less.--

Please amend the paragraph beginning at page 9, line 18, and ending at page 10, line 9, as follows.

--In the present invention, the aqueous medium comprises water as a main component, and may contain a water-soluble organic solvent. In the present invention, the aqueous medium contains an amine compound of a vapor pressure of 0.01 mmHg or higher

at 20 - 25°C, which significantly improves the water resistance of the gas-resistant image formed with the ink containing the aforementioned phthalocyanine dye. The mechanism of improvement in water resistance of the image due to the presence of such an amine compound is not yet ~~clarified~~, clear, but is considered to be as follows. The amine compound controls the agglomeration conditions of the dye in the ink, especially of dyes as defined in the present invention, which can efficiently the prevent bronzing phenomenon due to dye aggregation after printing, or deterioration of water-resistance caused by insufficient fixation of dye according to the dye agglomeration state.--

Please amend the paragraph beginning at page 10, line 15, and ending at page 11, line 1, as follows.

--Therefore, when the print medium absorbs moisture, for example, in a highly humid condition, the remaining amine solvent may interact with the dye to deteriorate the gas resistance. On the other hand, a solvent having a vapor pressure of 0.01 mmHg or higher at 20 - 25°C will decrease in the time by of evaporation and would not cause deterioration in gas resistance. ~~It is~~ This is considered the reason why bronzing resistance and water resistance are improved while maintaining gas resistance even when the print is left in an air-exposed environment. This is particularly effective when the viscosity of the ink is controlled at 1 to 5 mPa·s, preferably 1 to 2.5 mPa·s.--

Please amend the paragraph beginning at page 11, line 15, and ending at line 27, as follows.

--It is also preferable for the aqueous medium to include a glycol having a vapor pressure of 0.01 mmHg or higher at 20 - 25°C in order to improve ink jet discharge properties of the ink, more specifically, so-called intermittent ink discharge property, i.e., ink discharge property when the ink ejection from a nozzle is interrupted for a while and thereafter re-started, without deteriorating the water resistance improving the effect of the addition of an amine compound of vapor pressure of 0.01 mmHg or higher at 20 - 25°C to the ink. Such glycol can be for example ethylene glycol. The content of such glycol in the ink can be 2 to 20 mass%, preferably 3 to 10 mass%.--

Please amend the paragraph beginning at page 13, line 6, and ending at page 14, line 16, as follows.

--The aqueous medium may further contain a known surfactant for controlling the surface tension. As such a surfactant, there is ~~are~~, for example, an anionic surfactant such as a fatty acid salt, a higher alcohol acid ester salt, an alkylbenzenesulfonate salt or a high alcohol phosphoric acid ester salt; a cationic surfactant such as an aliphatic amine salt or a quaternary ammonium salt; a nonionic surfactant such as a higher alcohol-ethylene oxide addition product, an alkylphenol-ethylene oxide addition product, an aliphatic ethylene oxide addition product, a polyhydric alcohol aliphatic ester-ethylene

oxide addition product, an aliphatic amide-ethylene oxide addition product, a higher alkylamine-ethylene oxide addition product, a polypropylene glycol-ethylene oxide addition product, a fatty acid ester of a polyhydric alcohol, or a fatty acid amide of an alkanolamine; an amphoteric surfactant such as ~~of~~ an amino acid type or betain type. Such a surfactant is not particularly limited but preferably employed is a nonionic surfactant such as a higher alcohol-ethylene oxide addition product, an alkylphenol-ethylene oxide addition product, an ethylene oxide-propylene oxide copolymer or an acetylene glycol-ethylene oxide addition product. Such ethylene oxide addition product preferably has a molar addition number within a range of 4 to 20.--

Please amend the paragraph beginning at page 18, line 2, and ending at line 18, as follows.

--The ink-jet recording apparatus used in the present invention ~~are~~ is not limited to the apparatus as described above in which the head and the ink cartridge are separately provided. Therefore, a device in which these members are integrally formed as shown in FIG. 3 can also be preferably used. In FIG. 3, reference numeral 70 designates a recording unit containing an ink storing portion containing an ink, for example, an ink-absorbing member in it. The ink contained in the ink-absorbing member is ejected as an ink droplet from a head 71 having a plurality of orifices. Reference numeral 72 indicates an air passage for communicating the interior of the recording unit 70 with the atmosphere. This recording unit 70 can be used in place of the recording head 65 shown in FIG. 1, and detachably installed on the carriage 66.--

Please amend the paragraph beginning at page 19, line 17, and ending at page 21, line 1, as follows.

--The present invention is applicable to an ink-jet recording medium having a porous ink-receiving layer made of fine particles that adsorb a coloring material such as dye or pigment in the ink to form an image, especially by the ink jet system. Such recording medium for ink jet recording is preferably a so-called absorption type, in which an ink is absorbed by pores formed in an ink receiving layer on a substrate. An ink receiving layer of the absorption type is a porous layer mainly composed of fine particles containing a binder and other additives ~~according to the necessity~~: as necessary. Examples of the fine particles include an inorganic pigment such as silica, clay, talc, calcium carbonate, kaolin, an aluminum oxide such as alumina and alumina hydrate, diatomaceous earth, titanium oxide, hydrotalcite, and zinc oxide; and an organic pigment such as ~~an~~ a urea-formalin resin, an ethylene resin, and a styrene resin. The above materials can be used singly or in combination. A binder advantageously employed is a water-soluble polymer or a latex such as polyvinyl alcohol or a modified product thereof, starch or a modified product thereof, gum ~~Arabic~~, arabic, a cellulose derivative such as carboxymethyl cellulose, hydroxyethyl cellulose or hydroxypropylmethyl cellulose; a vinyl copolymer latex such as SBR latex, NBR latex, methyl methacrylate-butadiene copolymer latex, a functionally modified polymer latex, or ethylene-vinyl acetate copolymer; polyvinylpyrrolidone, maleic anhydride or a copolymer thereof, an acrylate ester copolymer, and two or more kinds may be employed in combination if necessary. It is also possible to use additives, such as a dispersant, a thickener, a pH regulating agent, a

lubricant, a fluidity modifying agent, a surfactant, a antifoaming agent, a releasing agent, a fluorescent whitening agent, an ultraviolet absorber, an antioxidant etc. ~~according to the necessity.~~ as necessary.--

Please amend the paragraph beginning at page 22, line 27, and ending at page 23, line 5, as follows.

--Table 2 shows a result of such attribution. Also Table 3 shows analysis results of the dyes 1 - 3 employed in the Examples and the Comparative Examples, where $x + y$ is $x + y$ in the general formula (I), and each ~~numerals~~ numeral indicates a sum of heights of the peaks in the liquid chromatogram.--

Please amend the paragraph beginning at page 28, line 3, and ending at page 29, line 1, as follows.

--The results shown in Tables 4 and 5 indicate that the ink of the present invention can provide an ink jet image excellent in water resistance and bronzing resistance and also is has especially excellent ~~the~~ ink discharge properties, which ink does not contain copper phthalocyanine component of $x + y = 2$ or less, and contains 2-pyrrolidone as an amine compound having a vapor pressure not less than 0.01 mmHg at 20 - 25°C and ethylene glycol as a glycol having a vapor pressure not less than 0.01 mmHg at 20 - 25°C.--

Please amend the paragraph beginning at page 29, line 4, and ending at line 11, as follows.

--Cyan ~~ink~~ inks were prepared and evaluated in the same manner as in Example 1, except for employing phthalocyanine dyes 4 and 5 as shown in Table 6 and employing an ink composition shown in Table 7. Results are shown in Table 7. In Table 6, x + y indicates x + y in the general formula (I), and each numeral indicates a sum of the heights of the peaks in the liquid chromatogram.--

Please amend the paragraph beginning at page 30, line 2, and ending at line 6, as follows.

--As explained above, the present invention provides a cyan-colored ink that can provide images of high saturation and less fading or ~~color~~ color change, particularly when recorded on a coated paper employing an inorganic pigment for the coating layer.--